

14 (A) The function of the red blood cells is to carry oxygen to the cells.

(b) The function of the leucocytes seems to be the destruction and devouring of invading bacteria injurious to the health of the organism.

(c) The plasma is a vehicle for carrying all properties of the blood except the oxygen and a certain amount of carbon dioxide, which are carried by the red cells. It supplies to the cells water and food substances and receives from them their waste products.

15. The functions of the blood are:

1. The breathing function which carries carbon<sup>dioxide</sup> from the heart and oxygen to it.
2. Nutritive function which carries food to tissues.
3. The excretory function which carries wastes from the body.
4. It regulates the body temperature.
5. Protective function because blood actually manufactures antitoxin which will fight diseases.
6. Has function of maintaining liquid content which is carried to tissues by it.
7. Transports hormones.

Complete the questions and  
hand in again



13/ Disorders of the arteries and veins may be avoided by adequate rest and relaxation, by the adoption of activity to one's strength, by appropriate management of powerful emotions, and by the avoidance of self-made as well as external poisons.



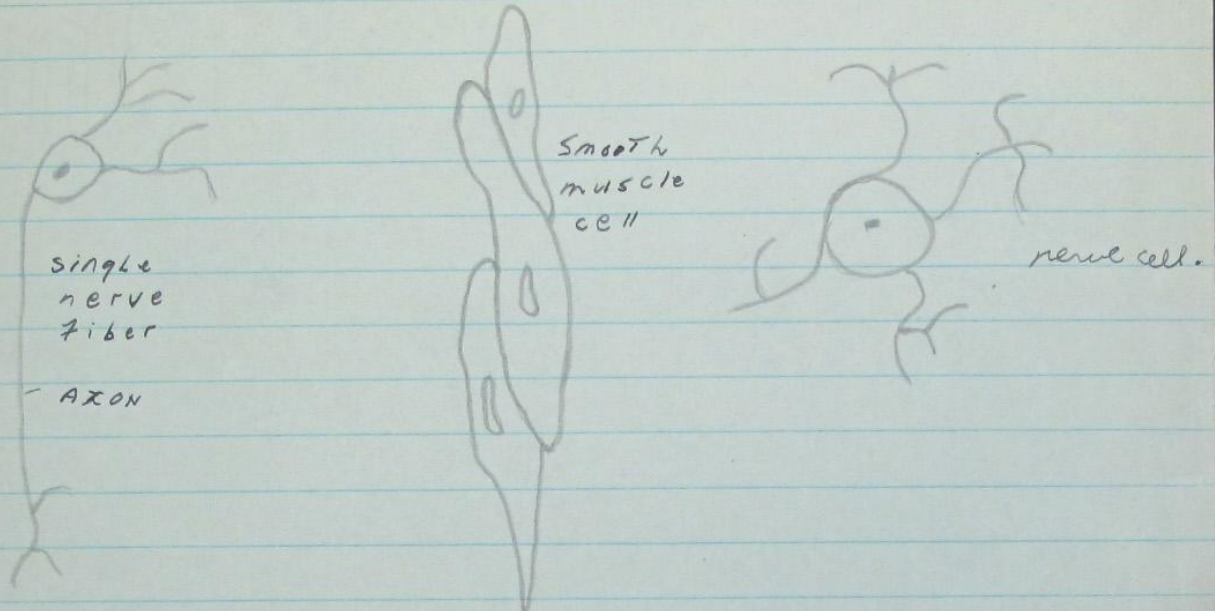
## Respiration.

1. Diagram and label the essential mechanisms of (a) external respiration.  
(b) internal " "
2. What principle governs the exchange of gases during respiration?
3. What do the ribs, intercostal muscles + diaphragm have to do with respiration.
4. What causes the air to enter or leave the lungs when you breathe?
5. What has the blood to do with respiration?
6. Explain: Tidal, supplementary, and residual air, vital capacity.
7. How is respiration controlled?
8. What can you do to protect your breathing apparatus from (a) infection  
(b) Irritation  
(c) poisoning.
9. How can you help to prevent transmission of respiratory infections?
10. What have the tonsils & adenoids to do with respiration?
11. How do the temp. & humidity of the air you breathe affect respiratory health?

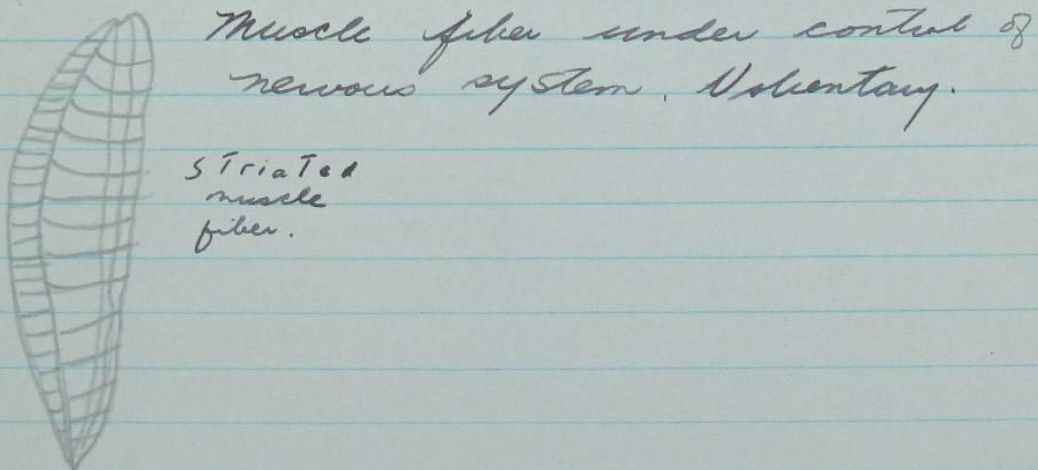


## Physiology - Chp. II

Every cell has its own particular function and its shape is controlled by that function.  
Variety: glands, blood, nervous, sex, etc.



Nerve cell connects with other cells, and muscles.



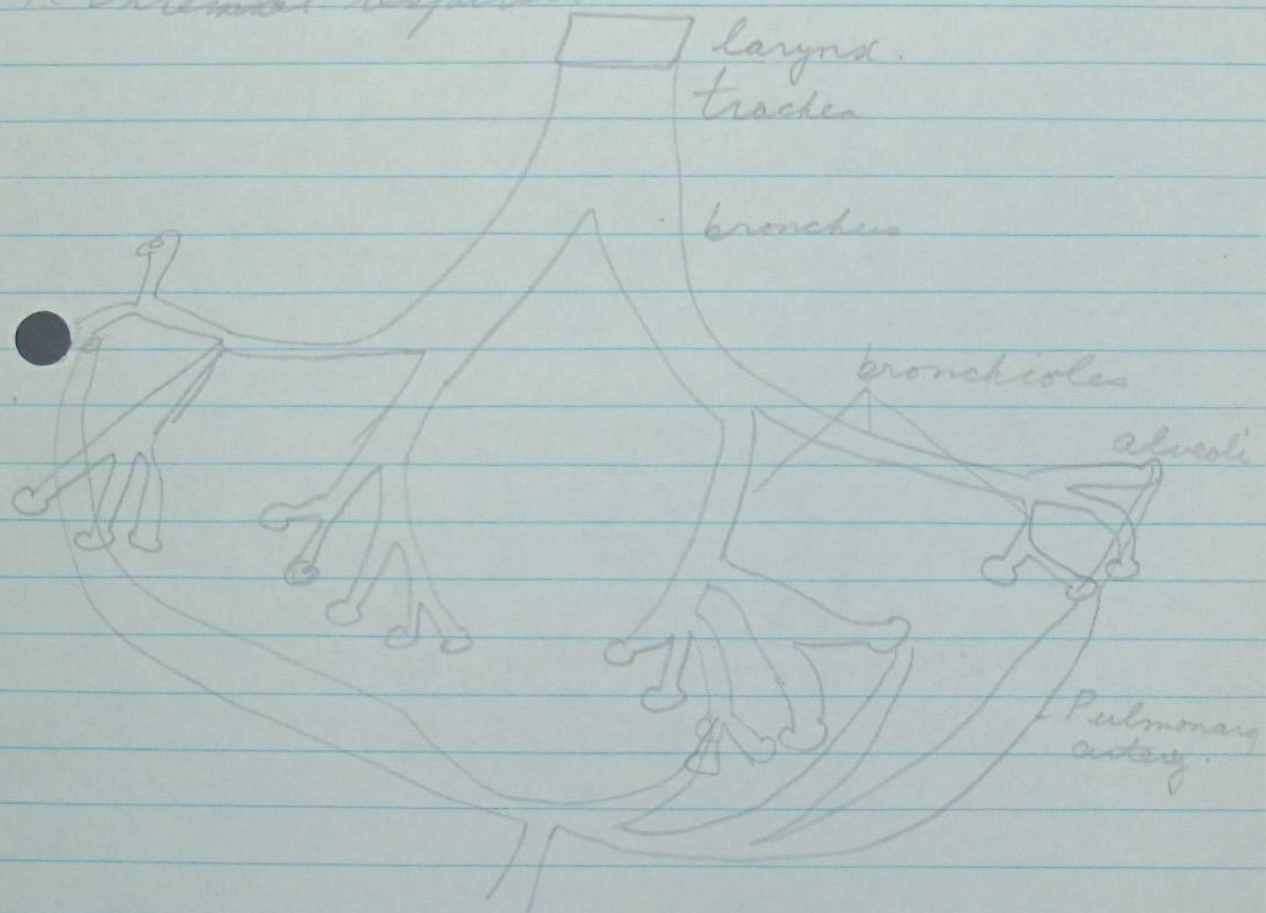
Each cell contains 48 Chromosomes. It's in 48 or diploid number.  
The Chromatin meshwork of the nucleus.  
It absorbs dye. Every cell has 48 except the sex cells - the sperm & the ovum, which are produced by the sex organs - ovary, and testes. These sex cells carry a haploid no. of Chrom. which means they have 24



Chrom -  $\frac{1}{2}$  of. Why two? Formation of  
new person is initiated by union of 1 ovum &  
1 sperm. Diploid no. rec'd by person

2. Osmosis. Gases have the tendency to move from areas of high pressure to areas of low pressure. In this case gas moves independently of another gas.  
 e.g.  $O_2$  moves to  $O_2$  - } by osmosis.  
 $CO_2$  + " "  $CO_2$  - }

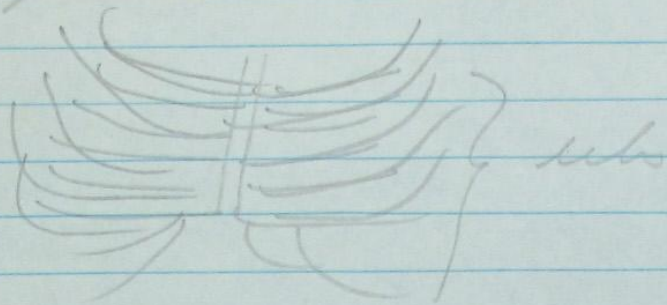
(a) External respiration



1. (b) Internal respiration

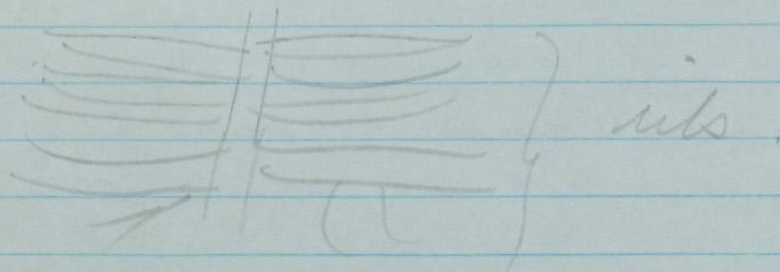


3. At the end of exhalation the intercostal muscles and the diaphragm are relaxed and the following is position of ribs & diaphragm



- diaphragm

During inhalation the intercostal muscles & diaphragm contract, raising ribs & lowering diaphragm thus enlarging space for lungs & air.



| diaphragm

The ribs protect the organs of the thoracic cavity. The diaphragm & intercostal muscles enlarge the thoracic cavity, making room for inhaled air.

4/ When the thoracic cavity is enlarged it causes a partial vacuum & air rushes in & equalize the



pressure caused by the outside air. After inhalation there is a relaxation of the muscles & the combination of the elasticity of the thoracic walls & the gravity. The chest returns to its former position & the intrathoracic pressure forces out the inhaled air. The <sup>action of the</sup> lungs is passive.

5. Inhalation & exhalation = Breathing = external respiration. The exchange of gases between the lungs & the pulmonary arteries and veins & between the capillaries & the tissues of the body is called internal respiration. The Hemoglobin in the blood combines with the  $O_2$  in the lungs. The  $CO_2$  in the blood stream is passed into the lungs. The hemoglobin gives up the  $O_2$  wherever it is needed in the body. The blood carries the  $CO_2$  from all parts of the body to the lungs.  $\therefore$  tissues of the body breathe by means of the blood.

6. Tidal air - the air breathed in & out  
Supplementary air - the air which can be forced out after the tidal air has been <sup>exhaled</sup>  
Residual air - the air which cannot be forced out  
Tidal air }  
Supplementary " } vital capacity.  
Residual " }

7.  $CO_2$  acts as a hormone because it stimulates the respiratory system by means of a nerve which runs to the medulla.



This nerve reacts to  $CO_2$  & if there is too much in the blood stream it speeds up the action of the respiratory S.

- 8/a) 1. Maintaining clear nasal passages.  
2. Breathing thru the nose.  
3. Avoiding impure air which may cause impairment thru constant irritation.  
4. Have plenty of rest, fresh air & good food. I fever, etc.  
5. Avoid any pollens or any causes of Hay  
6.

- b) 1. Avoid dust  
2. " pollens, etc. Causing hay fever, etc.  
c) 1. " Breathing poisonous gas like Carbon monoxide. For a) b) & c) keep the nasal passages healthy & have an annual phy. ex.

9) Take care never to cough or sneeze without covering over mouth. Do not breathe in people's faces. Do not leave soiled handkerchiefs in pockets or anywhere. If one has contagious respiratory disease like the common cold, keep away from other people. Wipe phones, etc, before & after.

10) The tonsils are organisms for fighting germs, etc which enter the respiratory system. If however, these become inflamed it is better to have them removed. Enlarged tonsils cause adenoids which tend to obstruct the nasal passage.



11. The air must be saturated with water when it reaches the lungs as the tissues are very delicate. The tissues of the upper respiratory system are not so delicate & they give up water to the air. If the air is too dry the tissues will become very dry causing irritation. The air must be warm as cold in the lungs might cause a chill.